Quicker, More Quickly, *Quicklier*

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1. The problem

Even small details in the morphological analysis of one language can have substantial consequences for morphological theory and for assumptions about the place of morphology in grammar. Consider the fact that to English ADVs derived from ADJs by suffixation of *-ly*, like QUICKLY,[1] there correspond no inflectional forms (*quickly*, **quicklier*, **quickliest*); instead there are inflectional forms lacking the *-ly* (*I left quicker than Kim, Robin left quickest of all*), plus alternative 'periphrastic' (syntactic) constructions (*more quickly*, *most quickly*).[2]

Two very different accounts of **quicklier* are found in the literature on morphology in generative grammar. For Aronoff (1976: 92-4, hereafter A), a comparative rule inserts *-er* under phonological and lexical conditions, and there is a rule truncating the morpheme *-ly* in ADVs, as in (1).[3] For Kiparsky (1982: 23-4, hereafter K), the comparative rule inserts *-er* only after ADJ stems, as in (2).

(1) A: Delete +ly / [C_0VC_0 ___ +er]$_{ADV}$

(2) K: Insert +er / ADJ ___]$_{ADJ/ADV[+COMP]}$

There are at least three separable sets of issues here: those having to do with the putative phonological conditioning on inflectional degree forms; those arising from the (quite robust) fact of mutual incompatibility between adverbial *-ly* and the degree suffixes *-er* and *-est*; and those concerned with the grammaticality of the periphrastic degree expressions with MORE and MOST. Speaking crudely, these are phonological, morphological, and syntactic issues, respectively. My initial focus is on the morphological issues, after which I will turn to the syntax and phonology of the matter.

I will argue that neither A's treatment nor K's is satisfactory on theoretical grounds; each entails a step that the prudent theoretician should be reluctant to make.

2. Theoretically offensive features of (1)

A maintains (92), as in (3), that inflectional degree forms are obligatory for some stems and that both degree forms are available for disyllables ending in *-ly*, periphrastic degree forms being obligatory otherwise. This leads him to expect both *more quickly* and *quicklier* (parallel to ADJs like *sprightlier*), but instead of **quicklier* we have *quicker*. Hence a truncation rule.

(3) Aronoff's generalizations for +er:
- a. Monosyllabic ADJs (BIG: bigger - *more big) and ADVs (FAST: faster - *more fast) and most disyllabic ADJs in -y (HAPPY: happier - *more happy) have only the inflectional comparative, with lexical exceptions (STUPID: stupider - *more stupid; APT: *apter - more apt)
- b. Some disyllabic ADJS and ADVs in -y, in particular those in -ly (LOVELY: lovelier - more lovely; SILLY: sillier - more silly; DEEPLY: deeper, by truncation from *deeplier - more deeply), allow both expressions
- c. Otherwise, ADJs and ADVs have only the periphrastic comparative (FLAGRANT: *flagranter - more flagrant)

But truncation - 'morphologically controlled deletion of affixes', as K (23) describes it, or 'stipulated zeroes in morphology', as I would put it so as to eliminate the gratuitous derivational view that attends the word *deletion* - is the sticking point. K himself observes, 'It would obviously be desirable to eliminate this powerful device from the theory' (23), and offers reanalyses for a range of putative instances of truncation. Janda & Manandise (1984) take the stronger position paraphrased in (4), and in my own work (summarized in Zwicky 1989: secs. 3.4, 5) I have attempted to show how 'zero inflection' and 'zero derivation' can be described without such stipulation.

(4) Position 1: There are no stipulated zeroes in morphological rules.

Note that (4) expresses a profound difference between morphology and syntax. In syntax there are stipulated zeroes of several types: empty constituents that require interpretation from context, as in *The horses moved to the edge of the stream and drank* NP[NULL]; empty constituents that must be anaphorically connected to antecedent constituents, as in *I can play racquetball, but Chris can't* VP[NULL]; and gaps, empty constituents that must be associable with filler constituents, as in *How big did you say it was* AP[NULL] *?* But the case for stipulated zeroes in morphology is slim indeed. And given the view - the 'process' view expounded in Anderson (1988) and Zwicky (1988) - that morphological rules involve phonological operations on stems, rather than a genuine lexeme-internal 'syntax' of stems and affixes, this difference is to be expected, since then affixes do not serve as lexeme-internal constituents bearing meaning on their own (as opposed to expressing the meanings associated with the rules introducing them).

3. Theoretically offensive features of (2)

At this point I must flesh out some of the details of the analysis K offers. K's treatment avoids stipulating a zero alternant of *+ly* when it is in combination with comparative *+er* by blocking the insertion of *+er* after ADV stems, including those ADV stems with the derivational suffix *-ly*. It also, according to K, correctly predicts the ungrammaticality of forms like **quickerly*, since these would involve the application of both rule (2), inserting the comparative inflectional suffix *+er*, and rule (5), inserting the ADV-forming derivational suffix *+ly*; the crucial claim for K here is that (2), applying after an ADJ stem in an ADJ or ADV with the feature [+COMP], is a more specific rule than (5), applying after an ADJ stem in an ADV, so that the preclusion of the general by the specific (Panini's Principle, also known as Proper Inclusion Precedence and the Elsewhere Condition).

(5) Insert +ly / ADJ ___ $]_{ADV}$

The appeal to Panini's Principle is, however, unjustified. Let me first note that the reference to 'ADJ/ADV' in (2) is not to just any old disjunction of categories. The ADJ and ADV categories constitute a class, both in the syntax and morphology of English and in a general theory of linguistic categories. Using 'A'[4] to denote the superclass comprising ADJs and ADVs (so that ADJs are picked out as the [A, -ADV] items and ADVs as the [A, +ADV] items), (2) should be reformulated as in (2').

(2') Insert +er / ADJ ___ $]_{[A,\ +COMP]}$

But now it is clear that (2') is not more specific than (5); rather, the conditions on their applicability overlap, with (2') applying to a more general class than (5) in one respect (A being a superclass of ADV) and (5) applying to a more general class than (2') in another respect (ADV being a superclass of [ADV, +COMP]). What, then, bars **quickerly*? One answer to this question, consistent with K's framework of 'lexical' (I would prefer 'level-ordered') morphology and phonology, would build on the claim that *+ly* derives not

just an ADV, but an inflectional form - namely, the positive degree - of an ADV. In such an analysis, (5) would be restated so as stipulate that the result is an ADV[+POS], rather than merely an ADV, as in (5'). Rules (2') and (5') would then be incompatible by virtue of the incompatibility of the degree features [+POS] and [+COMP].

(5') Insert +ly / ADJ ___]$_{ADV[+POS]}$

A rule like (5') presents no problem in level-ordered morphology, but it runs counter to a fundamental principle separating derivational morphology (DM) and inflectional morphology (IM) in more traditional approaches to morphology. Following the discussion in Zwicky (1989: sec. 5), I state this principle as in (6). The problem with (5') is that it conflates the functions of a DM rule (predicting the phonological shape of ADV lexemes on the basis of the phonological shape of ADJ lexemes) and an IM rule (predicting the phonological shape of a degree form for ADV lexemes).

(6) Position II: DM and IM constitute separate subcomponents of grammar, with DM relating the stems of different lexemes and IM relating a stem of a lexeme to its forms; DM and IM rules are otherwise independent of one another, except for the option that a DM rule can build on a stipulated form of a lexeme rather than on a stem.

Notice that the ungrammaticality of **quickerly* follows directly from the position in (6). A DM rule having the effect of (5) operates phonologically on the stem of an affected ADJ lexeme, not on the [+COMP] form. (It would be possible for a DM rule to stipulate that it always builds on the [+COMP] form of an ADJ lexeme, but this of course is not what happens in English.) Nonoccurring forms like **quickerly* are a problem only in a framework that allows free mixing of IM and DM, as level-ordered morphology does.

K abandons (6) and its analogues in order to express an intimate association between the phonological interactivity of affixes with their stems, on the one hand, and the linear ordering of affixes, on the other: The more interior an affix is, the greater its phonological interactivity tends to be, and the greater the phonological interactivity of an affix, the more interior it tends to be. I have suggested (Zwicky 1986) that this association, though intimate, is not a necessary one, and that elevating it to theoretical status, via the levels (or strata) of level-ordered morphology and phonology, brings in its train more problems than it solves. I see no good reason to relinquish (6) and the constraints it imposes on the interactions between DM and IM.

So much for (5'). But (2') also presents difficulties. There are two rather different ways to interpret such an 'insertion' rule in IM: a 'syntax of words' interpretation, in which the inserted affix (*-er*) fills an Af slot provided by a morphotactic rule ([A, +COMP] ---> [A, -ADV] Af); or a 'process' (morphology ex nihilo) interpretation, in which the affix is appended to a stem (with the features [A, -ADV]) to yield a form (realizing the features [A, +COMP]). On either interpretation, the relevant rule licenses morphological structures in which a construct with the features [A, +ADV, +COMP] has a daughter with the features [A, -ADV]. But then we have an inflectional form of a lexeme of one category specified by reference to a lexeme of another (derivationally related) category, contra the restrictions of Position II in (6).

There is also a 'referral' (Zwicky 1985a, b) version of K's approach, in which a rule refers the realization of [+COMP] on a category [A, +ADV] to its realization on the corresponding [-ADV] category.[5] But this, too, mixes derivation and inflection, by referring an inflectional form to a derivative lexeme. The reverse - building a derivative lexeme (a kind of referral, in a way) on an inflectional form of a base - is attested, and permitted by (6), but this sort of interaction is not.

4. Single purposes and double duties

Further data point in both directions, some favoring A's type of analysis (which is consistent with Position I but violates Position II), others favoring K's (which is consistent with Position II but violates Position I).

First, there is at least one clear example of a single-purpose, ADV-only, lexeme, namely SOON. The fact that this lexeme has the comparative *sooner* and superlative *soonest*, even though there is no ADJ stem for the suffixes to attach to (as (2) or (2') would require), speaks for A and against K. For some speakers, OFTEN has inflectional degree forms (*oftener*, *oftenest*) and tells the same story as SOON.

Second, there are a number of 'double-duty' items, homophonous ADV-ADJ pairs (with no meaning difference beyond that following from the category distinction) that are identically inflected,[6] as in (7).

(7) FAST: a fast(er) car, go fast(er)
EARLY: an early/earlier dinner, was over early/earlier
LATE: a late(r) breakfast, end late(r)
HARD: a hard(er) rain, rain hard(er)
LONG: a long(er) meeting, last long(er)
DEEP: a deep(er) dive, dive deep(er)
QUICK: a quick(er) fox, run quick(er)
SLOW: a slow(er) race, go slow(er)
LOUD: a loud(er) band, play loud(er)

This array of facts is consistent with both K's and A's analyses, given some device for blocking the suffixation of *-ly* for the ADV members of the pairs, either obligatorily (as for *FASTLY 'quickly', *LONGLY 'for a long time', *HARDLY 'intensely', and *LATELY 'at a late time') or optionally (as for QUICK(LY), SLOW(LY), and LOUD(LY)). What is not predicted by A's analysis, as K points out (24), is the possibility of a double-duty suppletive inflectional form, like *better*, *worse*, *best*, or *worst* (*a better/worse idea*, *do better/worse*; *the best/worst singing*, *sing best/worst*), in particular. These cannot be the product of A's truncation rule (1), since there is no positive *-ly* form to supply the stem phonology.

But the double-duty suppletives are a mixed blessing for K. He must treat the ADV WELL explicitly as a derivative lexeme based on the ADJ GOOD - presumably as a replacement for *GOODLY 'in a good manner' - so that GOOD can provide the ADJ stem for his comparative and superlative rules. And the ADV forms *better* and *best* must be treated explicitly as [+COMP] and [+SUP] forms built on the ADJ GOOD, presumably as replacements for **gooder* and **goodest*, these being the forms that K's rules predict. That is, K's treatment here appears to commit him to a particular view of suppletion, that suppletive forms are listed in the lexicon as substitutions for specified strings of morphemes.

This is a necessarily sequential view of the matter, in which GOOD with the feature [+COMP] is assigned the representation **good+er*, which is in turn replaced by *better*. So long as K wants the fact that *better* and *best* do double duty to follow from the rest of his analysis, he cannot have recourse to the more straightforward (and nonsequential) analysis, in which GOOD with the feature [+COMP] is assigned the shape *better* directly, the existence of this shape in the lexicon then blocking the application of rules for the realization of [+COMP]. The (closely linked) theoretical points at issue are (8) and (9).

(8) Position III: Morphological rules place static conditions on the properties of constructs (lexemes or forms); in particular, they make no reference to phonological representations other than those of stems and forms for lexemes.

(9) Position IV: Interactions between rules are governed not by sequential application but by a logic of defaults and invocations; bleeding-style interactions occur when one rule overrides another, feeding-style interactions when one rule invokes another, implicitly or explicitly.

The part of (9) that is germane to the analysis of suppletive degree forms is the clause about bleeding-style, or overriding, interactions between rules. Overrides are predicted, inter alia, by Panini's Principle and by a principle of Lexical Blocking, according to which the lexical listing of properties for a construct precludes the application of rules that predict incompatible properties for it.

According to (9), we ought always to be able to appeal to Lexical Blocking (rather than replacement) in the analysis of suppletive lexemes like the ADV WELL and suppletive forms like *better* and *best* - and in fact Kiparsky now (1989) argues, on the basis of extensive parallels between suppletion and gaps in paradigms, for blocking rather than replacement as the operative mechanism in suppletion - but this appeal seems to be unavailable for K's 1982 analysis. A's analysis is in no better shape in this regard, since it too depends on sequential application of rules, with a form like **quicklier* serving as a crucial intermediate stages in the derivation of the ADV form *quicker*.

5. A morphological rapprochement

What we want is an analysis with both sets of virtues, and without the theoretical defects of either approach.

I propose (with A) inflectional rules realizing [+COMP] and [+SUP] on both ADJS and ADVS (as in (10)), rather than (with K) basing the ADV forms on an ADJ source. However, I posit two relevant rules licensing an ADV derived from an ADJ (as in (11)) - DR1, calling for a *-ly* suffix; and DR2, involving no change - and (with K) propose to account for the configuration of occurring forms via interactions between rules, rather than (with A) by appeal to an additional 'fix-up' rule.

(10) In the context of [A],
a. IR1: [+COMP] is realized by a form with suffix -er
b. IR2: [+SUP] is realized by a form with suffix -est

(11) a. DR1: To a [A, -ADV] lexeme there corresponds a [A, +ADV] lexeme with suffix -ly
b. DR2: To a [A, -ADV] lexeme there corresponds an identical [A, +ADV] lexeme

The effect of these rules is to predict two ADV[+COMP] forms corresponding to the typical ADJ, each form involving one of the DM rules in (11) plus the IM rule in (10a) - ADJ+*li*+*er* (**quicklier*) involving DR1, ADJ+*er* (*quicker*) involving DR2. For standard English at any rate, DR1 (predicting the ADV lexeme QUICKLY, given that there is an ADJ lexeme QUICK) is the default ADV-forming rule, so that DR2 (predicting the ADV lexeme QUICK, given that there is an ADJ lexeme QUICK) manifests itself only when DR1 is inapplicable, which is what happens for the (systematically unacceptable) [+COMP] and [+SUP] forms of a garden-variety ADV like QUICKLY.

There is plenty of evidence for DR2. It describes the ADJ-ADV pairs (like FAST 'quick' paired with FAST 'quickly') listed in (7), as well as double-duty items - like RIGHT 'correct' and WRONG 'incorrect' (*the right/wrong answer, answer the question right/wrong*) - that happen to have no inflectional degree forms. Note Partridge (1963: 18) on the *-ly* suffix: 'Some adverbs...may occur with or without the suffix...; e.g., *slow(ly)*, *quick(ly)*, *cheap(ly)*. The *-ly* forms are more polite, the root forms are more vigorous. Sometimes [as

for HIGH and HIGHLY] there is a difference in meaning...' And Follett/Barzun (1966: 50): 'The truth is that many adverbs, including *right* and *wrong*, are formed without *-ly*. They do not differ in appearance from adjectives, but they are adverbs. We go *straight* to the point, not *straightly*; a transgressor of speed limits is driving *too fast*, not *too fastly*'; also cited are *drive slow* and *wide awake*, *doubtless* and *regardless*, and (52), '...words of adjectival form (without *-ly*) but adverbial function - such words as *relative*, *preparatory*, *preliminary*, *irrespective*, *independent*', as in *This subcommittee is now conducting field studies preparatory to drafting much-needed legislation.*

DR2 also provides an account of a curious set of facts about frequency ADJs derived by suffixing *-ly* to Ns denoting units of time (HOURLY, DAILY, WEEKLY, MONTHLY, YEARLY), as in *an hourly rate*, *their weekly visits*. These ADJs are ineligible as inputs for DR1: *HOURLILY, *DAILILY, and the like are absolutely unacceptable, and are not attested.[7] But they are eligible as inputs for DR2, which then provides the appropriate frequency ADVs: *We checked hourly on the temperature*, *They travel to Cleveland almost weekly.*

In addition, DR2 is well attested in nonstandard varieties in all parts of the English-speaking world. In fact it would not be unreasonable to argue that in some nonstandard varieties it is DR2, rather than DR1, that is the default ADV-deriving DM rule. The significance of DR2 is suggested by the fact that prescriptive grammars routinely caution against the forms it predicts - usually confusing form and function and accusing nonstandard speakers of using an ADJ where an ADV is called for, as when Foerster & Steadman (1931: 166) advise, 'Where there is a distinction in form between adjective and adverb, observe this distinction carefully', correcting RAPID in *I think he talks too rapid* to RAPIDLY, and REAL in *He is a real clever man* to REALLY; or when Irmscher (1972: 475) addresses 'CONFUSION OF ADVERBS AND ADJECTIVES' by warning, 'Ordinarily a word ending in *-ly* can be identified as an adjective instead of an adverb if it can be compared by inflection... Confusion, however, occurs in actual usage', and contrasting the 'colloquial use of adjective' in *I was driving along pretty steady* and *She seemed terrible upset* with the 'standard use of adverb' in *I was driving along pretty steadily* and *She seemed terribly upset*; or when Partridge (1963: 18) asserts boldly, 'ADJECTIVE FOR ADVERB. This is an illiteracy...'

6. Characteristics of the two-DR analysis

This analysis avoids the theoretically unpalatable features of A's and K's. Consistent with (4), there are no stipulated zeroes. Consistent with (6), DM and IM are separated, with the lexeme stems predicted by DM rules (in particular, DR1 and DR2) serving as the inputs to IM rules (in particular, IR1 and IR2). Consistent with (8), all four of these morphological rules are framed as static conditions, with no reference to stipulated intermediate stages in a derivation.

6.1. Zero derivation

The two-DR analysis does posit (in DR2) zero derivation, or conversion, as in (12) - a type of lexeme-to-lexeme prediction that is amply attested in the world's languages, and certainly in English (with its conversions, for instance, of Vs to Ns, as in the motion Ns RUN, WALK, STROLL, CRAWL, etc.; of Ns to Vs, as in the Vs of removal BONE, SHELL, SKIN, WEED, etc.; and of nationality ADJs to nationality Ns, as in ALSATIAN, SWISS, QUEBECOIS, TOGOLESE, etc.).

(12) Position V: DRs can stipulate that stem of the output lexeme is identical to the stem of the input lexeme.

This observation would not be worth making except for the fact that other assumptions about morphology entail the denial of Position V, and possibly of Position I (having to do with stipulated zeros) as well. Suppose we assume (with K and with Lieber (1981), Williams (1981), and Selkirk (1982), among others) that all DM is endocentric, with affixes serving as the heads of their morphological constructions. Consider the N STROLL, the V SKIN, and the N TOGOLESE. There must be rules predicting the category of such examples (as well as their phonology). Either these are DRs or they are not. They cannot be zero derivations (contra Position V), since then there would be no affixes to serve as heads of the morphological constructions. So either there are (three different) affixes, all stipulated to be zeros (contra Position I), or else the theoretical framework must be enriched by positing some new sort of rule (other than DRs) relating lexemes, as Lieber (1981: ch. 3) in fact does.

Now of course I am not assuming that all DM is endocentric - I am not even adopting the general 'syntax of words' view of morphology that makes this assumption plausible - so that a zero-derivation rule like DR2 presents no difficulty.

6.2. Stipulated overrides

The two-DR analysis also assumes, as in (13), that DRs serving the same function can stand in stipulated override-default relationships, as DR2 does to DR1.

(13) Position VI: In addition to override/default relations predicted by universal principles, there can be parochial stipulations of such relations, involving two particular rules of the same type (two DRs or two IRs) and serving the same function.

Parochial stipulations of overides are familiar from IM, where a 'less regular' realization rule (for instance, suffixation of *-en* realizing the PSP (past participle) category in English, as in *shaken*) overrides a 'more regular' one realizing the same gramatical categories (for instance, referral of the PSP form to the PST (past) form, as in *baked*); the labeling of such rule pairs as less versus more regular is equivalent to stipulating the former as the override and the latter as the default. The same sort of rule relationship is common in DM as well, as when the ('more productive') rule deriving abstract N from ADJ by suffixing *-ness* (PLAINNESS, FIRMNESS, CONCRETENESS, RAPACIOUSNESS) serves as the default as against other ('less productive') rules having the same function but involving other suffixes, among them *-ity* (SANITY, OPACITY, LOCALITY, SALINITY), *-(c)y* (OBSTINACY, EFFEMINACY, CONSISTENCY, INDECENCY), *-(c)e* (PERSISTENCE, RELUCTANCE, TURBULENCE, ELEGANCE), and *-th* (DEPTH, WARMTH, WIDTH).

Note that stipulated overrides in morphology are never absolute, since lexemes and forms can always be listed: hence the possibility of alternative lexemes like OPACITY and OPAQUENESS, and of alternative forms like the pasts *dreamt* and *dreamed*.

6.3. One last bash at **quicklier*

The two-DR analysis is all very well, but we have still not given any account of **quicklier*. For this, some additional statement is needed; I claim that the appropriate stipulation is that ADVS derived by DR1 have no [+EXT] ([+COMP] and [+SUP]) forms, that any output of DR1 belongs to a paradigm class with a defective paradigm.

This might look like the crassest sort of ad hoc stipulation, but in fact it can be seen as nothing more than the coincidence of two phenomena, each of which is quite ordinary: defectivity as a property of paradigm classes, as in (14); and DRs that predict the paradigm class of their outputs, as in (15).

(14) Position VII: A paradigm class can be characterized in part by lacking particular forms - that is, by a pattern of defectiveness.

(15) Position VIII: Among the properties DRs can require their output lexemes to have is membership in a paradigm class.

Paradigm classes characterized by defectivity are not uncommon. The English modal verbs, for instance, have a strikingly defective paradigm, which lacks all [-FIN] (nonfinite) forms: BSE (base), as in **We saw them must sing* versus *We saw them have to sing*; PRP (present participle), as in **We saw them musting sing* versus *We saw them having to sing*; and PSP, as in **They have musted sing* versus *They have had to sing*. I am claiming that there is a paradigm class of As, call it CLASS:NO, characterized by lacking all [+EXT] forms. (For As of CLASS:NO, there is only a [-EXT] form. Since English has no IRs realizing [-EXT], even for As of CLASS:YES, this form is phonologically identical to the A stem.)

Now membership in a paradigm class (in the *-en*-PSP class for Vs in English, in DECL[ension]:3 versus DECL:1/2 for Ns in Latin, and so on) is one of the properties of a lexeme - a 'purely morphological' property, there being also 'morphosyntactic' properties (playing a role in both morphological and syntactic generalizations) like membership in a category, for instance N, or possession of a grammatical category, for instance GEND[er]:MASC; 'purely syntactic' properties like membership in a syntactic subcategory, for instance the subcategory of Vs licensed to occur with two NP objects; phonological properties, in particular the information encoded in the stem of the lexeme; and semantic properties. A given DR relates the semantics, phonology, and purely syntactic properties of an input and output lexeme, and (among other things) it can also place conditions on the morphosyntactic and purely morphological properties of the output, as when the German DRs describing diminutives in *-chen (Mädchen)* and *-lein* (Fräu*lein*) impose GEND:NEUT on their output lexemes.

The imposition of (default) values for the feature CLASS by particular DRs pervades degree inflection in English. Prefixal derivation in English, in particular the rules deriving negative ADJs by prefixing *un-* and *in-*, preserves the CLASS value of the input on the output: HAPPY is CLASS:YES (*happier*) and so is UNHAPPY (*unhappier*); ACTIVE is CLASS:NO (**activer*) and so is INACTIVE (**inactiver*). ADJS derived from Ns with *-ic* (CUBIC, CELTIC, ATOMIC), from Ns with *-ish* (CHILDISH, ROGUISH, CLOWNISH), and from ADJs with *-ish* (GREENISH, BLUISH, YOUNGISH) are generally CLASS:NO, even when they are otherwise phonologically suitable for inflection (**cubicker*, **childisher*, **bluisher*), while those derived from Ns with *-y* (BONY, CHILLY, CURLY) and *-ly* (WORLDLY, GHOSTLY, SAINTLY) are generally CLASS:YES) when they are phonologically suitable (*bonier*, *worldlier*).

Now note the striking contrast between these ADJs derived from Ns by suffixing *-ly* (DR3, the WORLDLY type) and ADVs derived from ADJs by suffixing *-ly* (DR1). The outputs of DR3 are CLASS:YES if they satisfy phonological requirements for inflectibility, but the outputs of DR1 are as robustly CLASS:NO - this is the **quicklier* with which we began - as are ADJs derived with *-ic*, like CUBIC.

6.4. Single purposes and double duties again

A garden-variety ADJ, like CUTE or BRIGHT, has a corresponding ADV[-EXT] supplied by DR1 (*cutely* for CUTELY, *brightly* for BRIGHTLY) and a corresponding ADV[+EXT] supplied by DR2 (*cuter/cutest* for the ADV CUTE and *brighter/brightest* for the ADV BRIGHT). The ordinary pattern, then, is for ADVs in standard English to have a paradigm that is pasted together from the paradigms associated with the outputs of two different DRs.

Against this background, I return briefly to three sets of data from section 3: ADV-only inflectible lexemes like SOON; ADJ-ADV twins like FAST; and the double-duty suppletives *better/best* and *worse/worst*, which serve for both ADJ and ADV.

ADV-only lexemes are straightforward, since nothing I have said would require that there be an ADJ stem for every inflectible ADV.

ADJ-ADV twins (as in (7) above) come in two types, illustrated by FAST and QUICK. FAST-type ADJs, which have no DR2 counterpart ADVs, are just exceptionally ineligible for DR1; DR2 provides an ADV FAST corresponding to the ADJ FAST whether or not there is an ADV derived by DR1. QUICK-type ADJs, which have both counterpart ADVs (QUICK and QUICKLY), are exceptionally eligible for DR2 as well as for the default DR1.

The ADJ BAD follows the ordinary pattern of CUTE or BRIGHT, with the complication that it has suppletive [+EXT] forms, *worse* and *worst*. Its ADV[-EXT] correspondent *badly* is provided by DR1 and its ADV[+EXT] correspondents *worse* and *worst* are carried over from the ADJ, thanks to DR2 (which has the effect of making its output identical to its input except as stipulated otherwise). The ADJ GOOD is parallel to BAD, with the further complication that its ADV[-EXT] correspondent is not the *goodly* provided by DR1, but rather the idiosyncratic *well*.

7. The syntactic issues

The interaction between DR1 and DR2 provides *quicker* in the absence of **quicklier*. But what makes *more quickly*, the periphrastic alternative, available? And how do we prohibit double degree expressions like **more quicker* (which are ungrammatical in standard English)?

7.1. The syntax-morphology interface

We might attempt to account for these syntax-morphology interactions by treating the two domains as one, in the fashion of early transformational grammar. But despite A's remark that comparative inflection might be 'syntactic' (94), I propose to preserve the ('lexicalist') view that syntax and morphology are autonomous components of grammar, interacting with one another in very restricted fashion, as in (16) and (17). The metatheoretical benefits of such autonomy assumptions seem to me to justify upholding them so long as is reasonable, and in this regard my positions are congruent with most current theoretical frameworks for morphology.

(16) Position IX: Syntactic rules have no access to the morphological composition, or the purely morphological properties, of the lexemes instantiated by the words whose distribution these rules describe.

(17) Position X: Morphological rules have no access to the syntactic properties of the expressions within which the lexemes and forms they describe are instantiated.

Somewhat more concretely, syntactic rules express generalizations about the association of semantics to phrasal and clausal expressions; in so doing, they distribute properties (both purely syntactic and morphosyntactic) within these expressions, ultimately to individual words.[8] Morphological rules express generalizations about the properties of lexemes, including their lists of forms. An expression is wellformed if its words have the properties required by the syntactic rules (or stipulated in an idiom template) and if each word instantiates a form with the properties required by the morphological rules (or

stipulated idiosyncratically in the lexicon). That is, an expression must be simultaneously wellformed from the morphological and the syntactic point of view.

Even more concretely, let us return to the facts about comparatives and superlatives.[9] I will assume that degree ADVs - those modifying A, like VERY, MUCH, A LITTLE, NO, HOW, THAT, TOO, ENOUGH, SO, AS, and of course MORE and MOST - have the feature [+DEG], while V, VP, and S modifiers are [-DEG]. Syntactic rules will have to be responsible for licensing [A, -DEG, +EXT] words like the capitalized ones in *much FASTER than a speeding bullet* and *by far the BIGGEST of the problems*; for licensing [A, +DEG, +EXT] words as in *much MORE astounding than a speeding bullet* and *by far the MOST impressive of the problems*; for licensing [A, -DEG, -EXT] words as in *much more IMPRESSIVE than a speeding bullet* and *by far the most IMPRESSIVE of the problems*; and for prohibiting redundant [+EXT] words (**much MORE QUICKER*).[10]

The syntax then provides for structures of several types, and the lexicon supplies lexeme forms to fit in the word slots within those structures. An expression is illformed if it fails to satisfy syntactic requirements (as **more quicker than a speeding bullet* does) or if it fails to satisfy morphological requirements (as **quicklier than a speeding bullet* and **impressiver than Superdog* do). Expressions like *quicker than a speeding bullet* and *more quickly than a speeding bullet* satisfy all the relevant requirements of both types, and so are wellformed.

7.2. A sketch of a syntactic analysis

Though a full analysis would have to have many details filled in, I can sketch here the sort of syntactic analysis that will achieve the right results.

First, I posit two AP constructions associated with the semantics of comparison and with the occurrence of a [+EXT] word within the AP, and similarly for superlation. The constructions INFCOMP and INFSUP (inflectional comparison and superlation, respectively) require that the head A of the AP have the morphosyntactic property [+COMP] and [+SUP], respectively. The constructions PERCOMP and PERSUP (periphrastic comparison and superlation, respectively) require that a [+DEG] word modifying the AP's head have the morphosyntactic property [+COMP] and [+SUP], respectively. [ADV, +DEG, +COMP] and [ADV, +DEG, +SUP] are the 'particle lexemes' (Zwicky 1989: sec. 6.1) MORE and MOST, respectively.

Second, I assume that [-EXT] is the default for A expressions in syntax, so that [+COMP] and [+SUP] appear only when they are licensed by some rule. We then have an account of the ungrammaticality of expressions like **more happiest*, **most happier*, **too happier/happiest to talk*, **too bigger/biggest by six feet*, **so happier/happiest that I couldn't talk*, **as happier/happiest as anyone* (involving restrictions that are unlikely to be entirely semantic in nature).

And third, I assume that INFCOMP and PERCOMP (similarly, INFSUP and PERSUP) stand in a stipulated override/default relationship. If INFCOMP is used, PERCOMP is inapplicable; they cannot be used to reinforce one another. Of course PERCOMP is, in a sense, 'always available', as when some A lexeme lacks a [+COMP] form, or when conditions on coordination demand a [-EXT] form for parallelism, even for a lexeme that has [+EXT] forms (as for SMART in *It is a more attractive, smart, and ingenious idea than any other I've heard*).

The first of these steps depends on our allowing, as in (18), inflectional features to be distributed to a modifier, and not always to the head. A similar move will allow us to

describe the appearance of negation in (the modifying ADV) NOT in VP[-FIN]s like *not been to Vienna*, versus its appearance as an inflection on a (head) auxiliary V in VP[+FIN]s like *haven't been to Vienna* (Zwicky & Pullum 1983); and perhaps to describe the expression of the grammatical category of 'possession' within an NP, either in a (modifying) PP with head P OF (as in *recent destruction of the city*), or as an inflection on the (head) determiner of the NP (as in *the city's recent destruction*), though most details of this analysis are controversial. The third of these steps depends on extending Position VI, in (13), to syntax as well as morphology, as in (19).

(18) Position XI: Syntactic rules can require that a property of a construct be distributed to its head or to a modifier of that head.

(19) Position XII: In addition to override/default relations predicted by universal principles, there can be parochial stipulations of such relations, involving two syntactic rules that serve the same function.

Treating INFCOMP and PERCOMP (and INFSUP and PERSUP) as distinct syntactic constructions predicts that there could be contexts in which only one of them is permitted, and this prediction is fulfilled in English. There are at least three such contexts. First, [+DEG] comparatives and superlatives, those serving as modifiers of A rather than as predicates or as [-DEG] modifiers, must be periphrastic: *more deeply philosophical(ly)*, **deeper philosophical(ly)*, but *Terry is more deep*, *Terry is deeper*, *Sandy dug more deeply*, *Sandy dug deeper*.[12]

Second, there is a 'metalinguistic comparative' construction METACOMP (the 'metacomparative' of Pinkham (1982: sec. B3.1)) that uses PERCOMP only, as in *Jan is more bad than mischievous* 'It would be more appropriate to say that Jan is bad than to say that Jan is mischievous'; *Jan is worse than mischievous* is grammatical, but it does not have the right meaning to be an instance of METACOMP. Third, there is an 'absolute superlative' construction ABSSUP that uses PERSUP only, as in *You are most polite* 'You are extremely polite'; *You are politest* is grammatical in context (for instance, following *Chris and Tracy are very polite, but...*), but it does not have the right meaning to be an instance of ABSSUP. This treatment of METACOMP and ABSSUP depends on a stipulated relationship of invocation ('using', or 'calling up') between syntactic rules, as in (20).

(20) Position XIII: One syntactic rule can invoke another specific rule. When this happens, all the syntactic conditions of the invoked rule are in force, in addition to any other conditions of the invoking rule; the invoked rule contributes its semantics insofar as this does not conflict with the semantics of the invoking rule.

8. The phonological issue

I now return to the involvement of phonological shape in the availability of [+EXT] forms for particular lexemes.

Few topics in English morphology have excited so many, and so many different, proposals. A's version, referring to number of syllables and segmental phonology (in particular, ending in *-y*), was summarized in (3); Evans & Evans (1957), quoted in (21), suggest more detailed rules of thumb; Zwicky (1969), building on the discussions in Kruisinga (1932: 3.62-7) and Jespersen (1949: 347-63), gives the principles in (22); and Pullum & Zwicky (1984: 113-4) cite generalizations from Sweet (1891) that refer to number of syllables and segmental phonology (ending in *-er*, as in TENDER and BITTER, and ending in a syllable with a tense vowel, as in OBSCURE and POLITE).

(21) Evans & Evans's (1957: 105) generalizations:[13]
a. 'As a rule, the inflected form is preferred for short words, especially those ending in -d, -t, -r, or y, such as loud, soft, clear, happy.'
b. 'The form using more or most is preferred for longer words, especially those ending in (1) more than one unstressed syllable, such as tyrannical; (2) -ive or -ile, such as active and hostile; (3) -s, -ish, or -est, such as curious, foolish, honest; or (4) -ed or -ing, such as crooked and cunning.'
c. 'The qualified form...is required with (1) adverbs ending in -ly; (2) any word that can only be used predicatively, such as afraid, aware, content; (3) the word eager; (4) words that have an unusual or foreign form, such as antique, burlesque, bizarre.'

(22) Zwicky's (1969: 414) generalizations:
a. Disyllabic words ending in -le (NOBLE), -er (TENDER), -ow (YELLOW), and -y (HAPPY), or with tense vowels in their final syllables (POLITE, PROFOUND, SINCERE, OBSCURE) generally have inflectional forms.
b. Otherwise, words of two or more syllables (ACTIVE, AWFUL, INTELLIGENT, ABRUPT, EXACT) generally have periphrastic forms.

What is at issue here is the distribution of the paradigm feature CLASS for As in the English lexicon. I have already argued (in section 6.3) that some DRs predict default values of CLASS on their output lexemes; but such generalizations by no means cover the data hinted at in (3), (21), and (22), which suggest that the default value of CLASS for an A lexeme can sometimes be predicted in part from the phonology of its stem, as in (23).

(23) Position XIV: There can be principles making default predictions about certain properties of a lexeme on the basis of other of its properties; among these are principles making default predictions about purely morphological properties, like paradigm class, on the basis of phonological properties of stems.

I am not prepared to make a full inventory of the 'lexical redundancy rules' (LRRs)[14] that relate A stem phonology to values of CLASS in (any variety of) English. It is enough to observe that there are some very good default predictions - in particular, that ADJs with monosyllabic stems are mostly CLASS:YES, a prediction that is overridden by a stronger principle that ADJs zero-derived from V[PSP] are CLASS:NO (**scareder*, **pisseder* 'more angry') and is frustrated for lexemes belonging to formal style or technical registers (like APT) and for a handful of others (like WRONG); and that ADJs with stems of more two syllables (even those, like FATHERLY, MASTERLY, and LAWYERLY, that would be slated for inflectibility as a consequence of the DR describing them) are uniformly CLASS:NO, a prediction that is overridden only (for ADJs like UNHAPPY and UNLIKELY) by the even stronger principle that CLASS value is preserved through prefixal derivation.

The point would not be of much consequence if it had not been for Pullum & Zwicky's (1984) claim that such LRRs allow for a breach of a fundamental autonomy principle (in (24)) that goes hand in hand with (16); this is the Principle of Phonology-Free Syntax of Zwicky (1969) and Zwicky & Pullum (1986). Pullum & Zwicky (1984) consequently maintain that phonology is in fact irrelevant to the values of CLASS, which they do by observing that the putative LRRs are riddled with exceptions.

(24) Position XV: Syntactic rules have no access to the phonological properties of the lexemes instantiated by the words whose distribution these rules describe.

But the properties these LRRs predict from stem phonology are purely morphological (predicting whether a lexeme is in a paradigm class), not syntactic. So long as our framework distinguishes different types of properties - phonological, purely morphological, morphosyntactic, purely syntactic, semantic - and different components of grammar, we can constrain the way rules in particular components can make reference to these properties, and so can enforce the component-autonomy positions in (16), (17), and (24).

The crucial point is that the LRRs at issue predict a property like CLASS:YES, which is relevant only for morphological rules, not a property like INFCOMP, which is relevant only for syntactic rules. If we could predict INFCOMP versus PERCOMP from phonological properties of stems, then indeed the autonomy principle in (24) would be subverted. But so long as morphology and syntax are distinguished - so that CLASS is governed by one sort of regularity and INFCOMP by another, with their joint effect following from the requirement that wellformed expressions must exhibit all relevant regularities of both types - LRRs predicting paradigm class from stem phonology (and many other types of LRRs as well) are theoretically innocuous.

Notes

* This is a preliminary version (of 6 December 1988) of a paper presented at the 1988 annual meeting of the Linguistic Society of America in New Orleans. An earlier version was presented at SUNY Buffalo on 3 November 1988; my thanks to members of this audience, in particular to Joan Bybee and Don Churma, for their comments.

1. References to lexemes (meaning-phonology pairings) are in all caps, references to all sorts of linguistic expressions (including the inflectional forms of lexemes) in italics.

2. Since the facts about the superlative and the comparative expressions are almost entirely the same, I will use just one of them, namely the comparatives, as the basis for my discussion.

3. A notes that the rule applies before *-est* as well, so that it 'would take place before a class of morphemes rather than before a single morpheme' (93). This degree of generality presumably adds to its plausibility.

4. A = [+V, +N] in the now-standard feature decomposition of the major categories.

5. We cannot posit an implicational rule requiring that any category with the features [A, +COMP] has the feature [-ADV] as well, because this would say that ADVs had no comparatives at all.

6. Not all of the items listed in (7) are acceptable as ADVs for all speakers of English in all styles. FAST is (so far as I know), but QUICK is not. The point at issue is not which items happen to be on the list for a particular speaker, but the fact that there is such a list at all.

7. Other ADJs ending in *-ly* - including both those like FRIENDLY and KINDLY for which the *-ly* is predicted by a DR, and those like SILLY and SPRIGHTLY for which it is not - are awkward as inputs to DR1. As Thurber (1931: 151) puts it, 'You can say "he plays lovelily," but even though the word is perfectly proper, it won't get you anywhere. You might just get by with it at a concert; but try shouting it at a ball game.' Though awkward, FRIENDLILY, SILLILY, and many other 'lily words' are attested; *DAILILY is simply impossible.

8. I am using *word* to refer to syntagmatic entities in syntax, *lexeme* to refer to paradigmatic entities in morphology.

9. There are only a few works that attempt both to cover a wide variety of English data and to achieve a reasonable degree of formalization: for comparatives, Bresnan (1973),

Gazdar (1981), Pinkham (1982); for superlatives, Ross (1964). A full account of these phenomena must also cover the subordinate degree expressions with TOO (*too big for me to lift*), ENOUGH (*big enough for me to see*), SO (*so big that I couldn't lift it*), and AS (*as big as anyone I've ever seen*), all involving the [-EXT] form of an A.

10. Some speakers accept nested (nonredundant) comparison, as in *This sauce is much more tastier than the last sauce than we could have expected* 'The degree to which this sauce is tastier than the last sauce is much greater than we could have expected'. I will suppose that such examples are grammatical, though since they are very difficult to process and since they express very convoluted thoughts, they are awkward at best. It is hard to imagine how they could be prohibited in any but an ad hoc fashion, given the occurrence of sequences like the following: *How much tastier than the last sauce is this sauce? Much more than we could have expected.*

11. Or to a specified argument of that head or to an edge, though these possibilities are not at issue here.

12. A attributes to Alan Prince the observation 'that [what is in A's terms] the truncation is restricted syntactically' (93), with only the periphrastic forms occuring before ADJ.

13. They add the hedge, 'But this is a description of what usually happens, not of what must happen. Mark Twain wrote: *the confoundedest, brazenest, ingeniousest piece of fraud.*'

14. As they are usually referred to. Zwicky & Pullum (1986: 81) suggest 'lexical implication principles' as a more appropriate designation.

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